

WHAT IS CLAIMED IS:

1. A high limit electric thermostat having a temperature sensing bulb coupled via a capillary tube to a diastat within the thermostat housing, the diastat deflecting in response to expansion and contraction of fluid within the temperature sensing bulb, the deflection of the diastat acting through a member activates a snap-action mechanism at a particular temperature to transition an actuating mechanism from a first position to a second position to actuate a switch therein, the thermostat comprising:

a terminal block having a first channel defined therein;  
a lock rod affixed to the actuating mechanism and extending through the first channel in the terminal block;

a back cover having a second channel defined therein, the second channel terminating in a spring tab;

a reset slide slidably accommodated in the second channel, the reset slide having a locking sled extending therefrom; and

a bias spring operably positioned between the spring tab and the reset slide to bias the reset slide toward the lock rod.

2. The thermostat of claim 1, wherein the lock rod includes a reduced diameter portion that terminates in a locking head that defines the locking shoulder therebetween.

3. The thermostat of claim 2, wherein the locking head is extended through the first channel upon transition of the actuating mechanism from the first position to the second position, and wherein the locking sled of the reset slide is biased toward the reduced diameter portion in proximity to the locking shoulder.

4. The thermostat of claim 3, wherein transition from the second position to the first position of the actuating mechanism is prohibited by the locking sled of the reset slide in contact with the locking shoulder of the lock rod.

5. The thermostat of claim 4, wherein transition from the second position to the first position of the actuating mechanism is allowed upon manual action to slide the reset slide away from the lock rod against the bias of the bias spring.

6. The thermostat of claim 2, wherein an outer surface of the locking head provides an angled profile that forms a cam surface in relation to the locking sled of the reset slide.

7. The thermostat of claim 1, wherein the locking sled of the reset slide is accommodated in the first channel.

8. The thermostat of claim 1, wherein the reset slide defines a cavity therein to accommodate the bias spring, and a cowl extending reward of the cavity to accommodate the spring tab of the back cover during movement of the reset slide, the reset slide further defining a pair of cover receiving slots on either side thereof to slidably position the reset slide within the second channel.

9. A high limit electric thermostat comprising:  
a thermostat housing;  
a diastat positioned within the thermostat housing;  
a temperature sensing bulb coupled via a capillary tube to the diastat;  
a switch mechanism operably coupled to the diastat;  
a lock rod affixed to the switch mechanism and extending through the thermostat housing;  
a reset slide operably engaging the lock rod to allow transition of the switching mechanism from a first state to a second state and to prevent transition of the switching mechanism from the second state to the first state.

10. The thermostat of claim 9, wherein the switch mechanism comprises a snap action mechanism operably coupled to the diastat, and an actuating mechanism coupled to the snap action mechanism, and wherein the lock rod is affixed to the actuating mechanism.

11. The thermostat of claim 9, wherein the reset slide is slidably accommodated in a first channel in the thermostat housing, the first channel terminating in a spring tab, the thermostat further comprising a bias spring operably positioned between the spring tab and the reset slide to bias the reset slide toward the lock rod.

12. The thermostat of claim 11, wherein the thermostat housing includes a terminal block, and wherein the first channel is defined in the terminal block.

13. The thermostat of claim 11, wherein the thermostat housing defines a second channel through which the lock rod extends, wherein the reset slide includes a locking sled extending therefrom, and wherein the second channel further slidably accommodates the locking sled therein.

14. The thermostat of claim 13, wherein the thermostat housing includes a back cover, and wherein the second channel is defined in the back cover.

15. The thermostat of claim 10, wherein the diastat deflects in response to expansion and contraction of fluid within the temperature sensing bulb, the deflection of the diastat, acting through a member, activates a snap-action mechanism at a particular temperature to transition the actuating mechanism from the first position to the second position, the actuating mechanism having a magnet positioned therein, the switch mechanism further comprising a reed switch positioned in proximity to the actuating mechanism such that transition of the actuating mechanism between the first and the second positions transitions contacts of the reed switch.

16. The thermostat of claim 9, wherein the reset slide is manually operable to allow transition of the switching mechanism from a second state to a first state.

17. The thermostat of claim 9, further comprising an adjusting screw to allow a user to vary an operating point of the switch mechanism.

18. A temperature regulation system, comprising:  
a primary temperature control thermostat having a first temperature sensing element positioned within an environment to be regulated;  
a high temperature limit thermostat having a second temperature sensing element positioned within an environment to be regulated;  
a heating control mechanism electrically coupled to the primary temperature control thermostat and to the high temperature limit thermostat such that the heating control mechanism shuts off when either of the primary temperature control thermostat and the high temperature limit thermostat commands the heating control mechanism to shut off; and  
wherein the high temperature limit thermostat includes a manual reset mechanism comprising a lock rod affixed to a switch mechanism of the high temperature limit thermostat and extending through housing thereof, and a reset slide operably engaging the

lock rod to allow transition of the switching mechanism from a first state to a second state and to prevent transition of the switching mechanism from the second state to the first state.

19. The system of claim 18, wherein manual resetting via the reset slide is required once the high temperature limit thermostat commands the heating control mechanism to shut off before the high temperature limit thermostat can transition from the second state to the first state.

20. The system of claim 18, wherein the temperature at which the high temperature limit thermostat commands the heating control element to shut off is preset.